



The effect of soil and vegetation cover on the degree of connectivity at the hillslope and channel scales in arid and semi-arid areas.

A. Yair

The Hebrew University, Jerusalem, Israel (aaron@vms.huji.ac.il / Fax:97226514329 / Phone: 97226522034),

Many studies have been concerned with the scale issue in geomorphology and hydrology. A positive relationship between annual rainfall and geomorphic processes (runoff and erosion rates) and environmental factors (water regime, soil and vegetation cover) is often assumed for arid and semi-arid areas with an annual rainfall in the range of 100-300 mm. Such an assumption implies a good connectivity along hillslopes as well as at the hillslope- channel interface. This assumption disregards the fact that changes along a climatic gradient are not limited to purely climatic factors. They are often accompanied by a parallel change in surface properties; especially the relative extent of rocky, soil and vegetation covered surfaces that greatly differ in their response to rainfall. Hydrological data collected at two instrumented watersheds, located one in an arid rocky area, and the second in a semi-arid area with extensive soil and vegetation cover, clearly show that the degree of connectivity, at the hillslope and channel scales, within first order drainage basins decrease with increasing annual rainfall.